



August 2, 2017

VIA EMAIL

Abigail Daken
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
MC 6202A Washington, DC 20460
ceilingfans@energystar.gov

RE: Big Ass Solutions Comments on the U. S. Environmental Protection Agency's Draft 2 Version 4.0 ENERGY STAR® Residential Ceiling Fans Specification

Dear Ms. Daken:

Delta T Corporation, dba Big Ass Solutions, thanks the EPA for the opportunity to comment on Draft 2 Version 4.0 Energy Star Residential Ceiling Fans Specification. Big Ass Solutions supports the EPA in its effort to establish eligibility criteria and identify products with superior energy efficiency for the benefit of businesses and individuals.

Lines 22-23 - Definitions Section E. Ceiling Fan Efficiency¹: The ratio of the total airflow to the total power consumption, in units of cubic feet per minute per watt (CFM/W).

The provided definition of Ceiling Fan Efficiency (CFE) is unclear and will be confusing to consumers who historically have been provided efficiency at high speed. EPA references the definitions from 10 CFR Part 430, Subpart B, Appendix U, *Definitions*. Below is the definition of CFE provided in 10 CFR Part 430.

1.8. Ceiling fan efficiency means the ratio of the total airflow to the total power consumption, in units of cubic feet per minute per watt (CFM/W).

There are two numbers used to calculate CFE, total airflow and total power consumption. Total airflow is a term defined in 10 CFR Part 430, Subpart B, Appendix U, *Definitions*. Below is the definition of total airflow.

1.22. Total airflow means the sum of the product of airflow and hours of operation at all tested speeds. For multi-head fans, this includes the airflow from all fan heads.

The following equation is provided in 10 CFR Part 430 (Eq. 1 and Eq. 6).



$$\text{Ceiling Fan Efficiency (CFM/W)} = \frac{\sum_i(\text{CFM}_i \times \text{OH}_i)}{W_{sb} \times \text{OH}_{sb} + \sum_i(W_i \times \text{OH}_i)}$$

The numerator of the equation is the total airflow for the fan (aka airflow provided during a typical day, as determined using the operating hours from Table 3 to Appendix U to Subpart B of Part 430).

Total power is not a defined term in 10 CFR Part 430 and appears only twice in the document. The first occurrence is in the definition of CFE. The second is associated with the equation shown above.

Where:

CFM_i = sum of airflow at a given speed for each head,

OH_i = operating hours at a given speed,

W_i = **total power consumption** at a given speed,

OHS_b = operating hours in standby mode, and

WS_b = power consumption in standby mode.

Since total power consumption is not defined in 10 CFR Part 430 as it is being utilized to calculate ceiling fan efficiency, BAS recommends that the definition for CFE be clarified to minimize confusion between power consumption at a given speed or operating mode (standby) and total power consumption on a typical day. BAS also recommends that the difference between total airflow and airflow be clarified in a similar manner.

Lines 238-239 - 4.1 Wired and Remote Controls: Certified products that offer Wi-Fi-based remote control must provide at least one alternative control path using a different *protocol* as a backup in case of Wi-Fi connectivity failure.

Big Ass Solutions would like EPA to clarify its use of the word *protocol* in the sentence beginning on line 238. In controls, *protocol* is becoming a defined term that relates specifically to wired and non-wired communication languages/protocols (Zigbee, BACnet, Z-Wave, Bluetooth, etc.). If EPA intended to require an alternative means of control (pull chain, IR remote, hard-wired wall control, etc), then it is suggested a different term be used to avoid the potential for future misinterpretation.



As an industry stakeholder, Big Ass Solutions greatly appreciates the opportunity to provide these comments for your review.

Sincerely,

A handwritten signature in black ink, appearing to read 'T. Sawyer', with a small 'IV' written to the right of the signature.

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